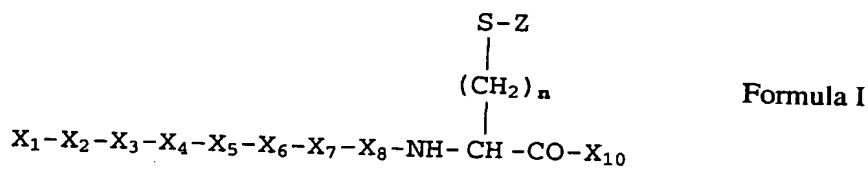


CLAIMS

1. A compound having bone stimulatory activity, the compound comprising a peptide having an amino acid sequence of Formula I:



in which:

X_1 and X_{10} are positively charged polar amino acids;

X_4 and X_8 are negatively charged polar amino acids;

X_5 is an aromatic amino acid;

10 X_2 , X_3 , X_6 and X_7 are non polar neutral amino acids or uncharged polar amino acids; Z represents a blocking group; and n is an integer from 1 to 3.

2. A compound of claim 1, in which each of X_1 and X_{10} is independently selected from the group of arginine and lysine; each of X_2 , X_3 , X_6 and X_7 is independently selected

15 from the group of threonine, valine, serine, alanine or glutamine; X_5 is histidine or phenylalanine; each of X_4 and X_8 is aspartic acid or glutamic acid; and Z is a substituted or unsubstituted alkyl, carboxyalkyl or carboxyamidoalkyl group.

3. A compound of claim 1 or claim 2, in which Z is selected from the group consisting

20 of a lower alkyl group, carboxyloweralkyl or carboxyamidoloweralkyl.

4. A compound of claim 3, in which the alkyl group is methyl or ethyl and n is 1 or 2.

5. A compound of any one of claims 2, 3 or 4, in which the alkyl group of Z is methyl.

25

6. A peptide with bone stimulatory activity comprising an amino acid sequence containing 10-amino acids selected from the group consisting of peptides of the following Formula Ia:

K T Q E F T A E X₉ K
 R T Q E F T A E X₉ K
 R T Q E H T A E X₉ K
 K T Q E H T A E X₉ K

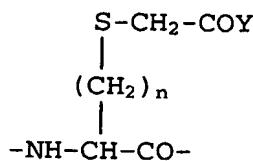
Formula Ia

5

in which X₉ is methionine or a modified methionine or a modified cysteine.

7. A peptide of claim 6, in which X₉, when a modified methionine or a modified cysteine, is represented by the formula:

10



wherein Y represents a hydroxyl, alkoxy or amino group; and n is an integer from 1-3.

8. A peptide of claim 7 in which n is 1 or 2.

15

9. A peptide of any preceding claim in which at least one of the C-terminus of the peptide or the N-terminus of the peptide includes a protecting group.

10. A peptide of claim 9, wherein the protecting group of the N-terminus is an acetyl group, and the protecting group of the C-terminus is an amino group.

11. A peptide having the amino acid sequence identified as SEQ ID NO:1, wherein the N-terminus is optionally protected with an acetyl group, and the C-terminus optionally protected with an amino group.

25

12. A peptide having the amino acid sequence identified as SEQ ID NO:2, wherein the N-terminus is optionally protected with an acetyl group, and the C-terminus optionally protected with an amino group.

13. A peptide having the amino acid sequence identified as SEQ ID NO:3, wherein the N-terminus is optionally protected with an acetyl group, and the C-terminus optionally protected with an amino group.

5

14. A peptide having the amino acid sequence identified as SEQ ID NO:4, wherein the N-terminus is optionally protected with an acetyl group, and the C-terminus optionally protected with an amino group.

10 15. A peptide having the amino acid sequence identified as SEQ ID NO:5, wherein the N-terminus is optionally protected with an acetyl group, and the C-terminus optionally protected with an amino group.

15 16. A peptide having the amino acid sequence identified as SEQ ID NO:6, wherein the N-terminus is optionally protected with an acetyl group, and the C-terminus optionally protected with an amino group.

20 17. A method of stimulating bone growth in a mammal comprising administering to the mammal an effective amount of a compound or peptide, as the case may be, according to any preceding claim.

18. A method of treating osteoporosis in a mammal comprising administering to a mammal a therapeutically effective amount of a compound or peptide, as the case may be, according to any of claims 1 to 16.

25

19. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a therapeutically acceptable amount of a compound or peptide, as the case may be, according to any of claims 1 to 16.

30 20. Use of a compound or peptide of any of claims 1 to 16 in the manufacture of a medicament for stimulating bone growth.

21. Use of a compound or peptide of any of claims 1 to 16 in the manufacture of a medicament for treating osteoporosis.

20. Use of a compound or peptide of any of claims 1 to 16 in the manufacture of a medicament for aiding bone repair.